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Acute Coronary Syndromes

CIRCULATING PROGENITOR CELL LEVELS ARE HIGHER IN PATIENTS WITH ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION COMPARED TO OTHER ACUTE CORONARY SYNDROME PRESENTATIONS

Poster Contributions
Hall C
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Session Title: Acute Coronary Syndromes: NSTEMI
Abstract Category: 1. Acute Coronary Syndromes: Clinical
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Background: Circulating progenitor cells (PCs) are mobilized in response to myocardial injury and reflect reparative/regenerative potential. We hypothesized that the degree of PC mobilization differs between different acute coronary syndrome (ACS) presentations.

Methods: We recruited 90 ACS patients (mean age 65±15 years). Nine patients with STEMI, 69 with NSTEMI and 12 with unstable angina were compared to 180 age- and gender-matched subjects with stable coronary artery disease (CAD). Blood samples were obtained for enumeration of PCs as CD45 dim mononuclear cells by flow cytometry with cells expressing CD34 and CD133 epitopes representing hematopoietic PCs and those expressing vascular endothelial growth factor receptor (VEGF2R) representing endothelial-enriched PCs. Mann-Whitney nonparametric test was used to compare differences in PCs between groups.

Results: Endothelial-enriched PC levels were higher in patients with STEMI compared to other groups (Table 1) and correlated with peak troponin levels in ACS (CD34+/VEGF2R+: r=0.28, p=0.012; CD34+/CXCR4+/VEGF2R+: r=0.29, p=0.009). These findings persisted after analysis of covariance to account for age, gender, diabetes, smoking status, and statin use.

Conclusions: These results suggest endothelial-enriched PCs are mobilized proportionately to the magnitude of myocardial damage in subjects with ACS while hematopoietic PCs remain unchanged. Whether the magnitude of PC response to injury relates to outcomes remains to be studied.

Table 1. Mean circulating progenitor cell levels by ACS category

Circulating Progenitor Cells	Mean PC levels ± standard deviation (cells/μL)				P-values		
	STEMI (N=9)	NSTEMI (N=69)	Unstable Angina (N=12)	Stable CAD (N=180)	STEMI vs. NSTEMI	STEMI vs. Unstable Angina	STEMI vs. Stable CAD
$CD34^+$	2.94±1.80	2.78±3.43	2.02±1.10	2.25±1.80	0.37	0.27	0.17
$CD34^+/CD133^+$	1.36±0.84	1.22±1.15	0.92±0.49	1.07±1.01	0.35	0.19	0.14
$CD34^+/VEGF2R^+$	0.37±0.38	0.22±0.21	0.09±0.07	0.18±0.16	0.11	0.003	0.037
$CD34^+/CXCR4^+/VEGF2R^+$	0.37±0.38	0.21±0.21	0.08±0.07	0.17±0.15	0.08	0.003	0.030